

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	William Shepard et al.	Art Unit :	3677
Serial No. :	10/735,447	Examiner :	James R. Brittain
Filed :	December 12, 2003	Conf. No. :	2020
Title :	LOOP MATERIALS FOR TOUCH FASTENING		

BRIEF ON APPEAL

Applicants are appealing the final rejection of claims 1-17 and 28. Applicants request that the rejection of these claims be reversed. A Notice of Appeal was filed on December 29, 2006.

(1) Real Party in Interest

The real party in interest is Velcro Industries B.V., Curacao, Netherlands Antilles.

(2) Related Appeals and Interferences

There are no related appeals or interferences.

(3) Status of Claims

Claims 1-17 and 28 stand rejected and are under appeal.

Claim 18 is cancelled.

Claims 19-27 are withdrawn.

(4) Status of Amendments

As stated in the Advisory Action dated November 24, 2006, for purposes of appeal, all amendments have been entered.

(5) Summary of Claimed Subject Matter

This invention relates generally to loop materials for touch fastening. Claims 1, 2, and 28 are in independent form.

Claim 1 features a loop material that includes a web of nonwoven fibrous material having raised areas, rib areas surrounding the raised areas, and planar areas between the rib areas. The

raised areas, which are defined by fibers of the web, define loops constructed for engagement with male touch fastener elements. The rib areas anchor the loops defined by the raised areas. The planar areas are defined by the web and are substantially in the plane of the web.

Claim 1 reads as follows:

1. A loop material for touch fastening comprising:
a web of nonwoven fibrous material defining a plane, the web including:
 - (a) raised areas defined by fibers of the web, the raised areas being elevated above the plane of the web and defining loops constructed for engagement with male touch fastener elements;
 - (b) rib areas surrounding the raised areas to anchor the loops; and
 - (c) between the rib areas, planar areas that are substantially in the plane of the web, the planar areas being defined by the web.

An embodiment of claim 1 is shown, for example, in Figures 2 and 2A. Referring to Figures 2 and 2A, a loop material 10 includes raised areas in the form of loop domes 12, ring-shaped rib areas 14 surrounding the loop domes 12, and connecting rib areas 16 extending between the ring-shaped rib areas 14. See, e.g., Application, p. 5, lines 6-9. Between the rib areas 14, 16 lie planar areas 18 of compressed fibers, which lie substantially in the plane of the web, and are not intended for engagement with hook members. See, e.g., id., lines 9-11.

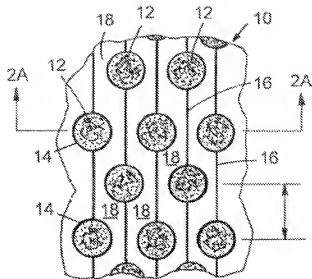


FIG. 2

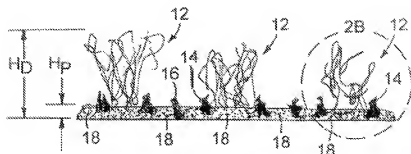


FIG. 2A

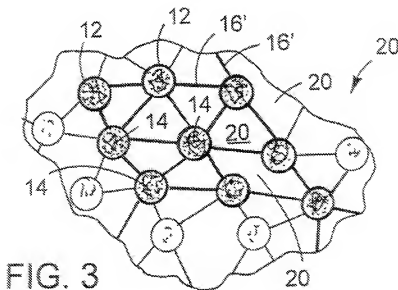
This structure helps to prevent permanent flattening of the loops and provides advantageous crush resistance. See, e.g., id., p. 3, line 30 – p. 4, line 2.

Claim 2 features a loop material that includes a web of nonwoven fibrous material having raised areas, rib areas surrounding the raised areas, and open areas between the rib areas. The raised areas define loops constructed for engagement with male touch fastener elements. The rib areas anchor the loops defined by the raised areas. The open areas between the rib areas are free of fibers of the web.

Claim 2 reads as follows:

2. A loop material for touch fastening comprising:
a web of nonwoven fibrous material defining a plane, the web including:
(a) raised areas elevated above the plane of the web, defining loops
constructed for engagement with male touch fastener elements;
(b) rib areas surrounding the raised areas to anchor the loops; and
(c) between the rib areas, open areas that are free of fibers of the web.

An embodiment of claim 2 is shown, for example, in Figure 3. Referring to Figure 3, a loop material includes loop domes 12 surrounded by rib areas 14. See, e.g., id., p. 6, lines 3-4. Connecting rib areas 16' connect every loop dome to all six adjoining loop domes, and the areas 20 in between the rib areas 14, 16' are open. See, e.g., id., lines 4-6. All of the material that was originally between the rib areas, both fibers and polymer, has been forced into the rib areas, leaving an open net loop material. See, e.g., id., lines 6-7. This material is lightweight, breathable, and can be stretchable. See, e.g., id., line 8.



Claim 28 features a loop material that includes a nonwoven web having raised areas, rib areas surrounding the raised areas, and planar areas between the rib areas. The raised areas

define loops constructed for engagement with male touch fastener elements. The rib areas anchor the loops defined by the raised areas. The rib areas comprise fused fibers of the nonwoven web.

Claim 28 reads as follows:

28. A loop material for touch fastening comprising:
a nonwoven web defining a plane, the web including:
(a) raised areas, elevated above the plane of the web, defining loops constructed for engagement with male touch fastener elements;
(b) rib areas surrounding the raised areas to anchor the loops; and
(c) between the rib areas, planar areas that are substantially in the plane of the web,
wherein the rib areas comprise fused fibers of the nonwoven web.

An embodiment of claim 28 is discussed, for example, at page 8, lines 28-29 of Applicants' application, where Applicants explain that the web itself can be used as the resin that forms the rib regions.

(6) Grounds of Rejection to be Reviewed on Appeal

Claims 1, 3-13, and 15-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either Kawanaka (JP 9-3755) or Ito (WO 01/11130), taken in view of Jackson (U.S. Patent No. 5,699,593) and Harwood (U.S. Patent No. 3,047,444).

Claims 2-4 and 8-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jackson (U.S. Patent No. 5,699,593) in view of Harwood (U.S. Patent No. 3,047,444).

Claim 28 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Jackson (U.S. Patent No. 5,699,593) in view of King (U.S. Patent No. 5,595,567).

(7) Argument

Claim Rejections Based on Kawanaka/Ito, Jackson, and Harwood

Claims 1, 3-13, and 15-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either Kawanaka (JP 9-3755) or Ito (WO 01/11130), taken in view of Jackson (U.S. Patent No. 5,699,593) and Harwood (U.S. Patent No. 3,047,444). Applicants' claim 1 features loop materials that include a web of nonwoven fibrous material having planar areas, raised areas defining loops, and rib areas surrounding the raised areas to anchor the loops. Kawanaka, Ito, Jackson, and Harwood, whether taken alone or in any proper combination, fail to disclose or suggest the loop materials of Applicants' claims 1, 3-13, and 15-17.

Kawanaka discloses a nonwoven fabric that includes shrunk fibers and non-shrinking fibers that are adhered to one another in spaced apart locations using an embossing roll. See, e.g., Kawanaka, Abstract and Figure. Fiber protrusions extend from the nonwoven fabric between the points of adhesion. See, e.g., id.

Ito discloses a nonwoven fabric that has been subjected to a heat embossing treatment to form non-embossed island regions surrounded by embossed sea regions. See, e.g., Ito, Abstract; Figures 1 and 2. Ends of the fibers that make up the non-embossed island regions are fixed to the embossed face (i.e., the embossed sea regions) of the nonwoven fabric by heat and pressure. See, e.g., id.

The Examiner acknowledges that neither of these references discloses rib areas, much less rib areas surrounding the raised areas to anchor loops.

The Examiner also acknowledges that Jackson does not identify his bond pattern, discussed below, as creating ribs. However, the Examiner asserts that Jackson and Harwood, taken together, would have suggested to the person of ordinary skill in the art to modify Kawanaka or Ito to include ribs. Applicants respectfully disagree.

Referring to Figure 8 of Jackson, which is reproduced below, Jackson discloses a loop fastening material 25 that includes multiple yarns 82 that are bonded to an orientable backing substrate. See, e.g., Jackson, col. 3, lines 32-38; col. 4, line 30 — col. 6, line 29. After bonding the yarns 82 to the backing substrate, the backing material and yarn laminate is oriented

transverse to the lengthwise direction of the yarns 82, causing the yarns to become lofter. See, e.g., id., col. 3, lines 40-49.

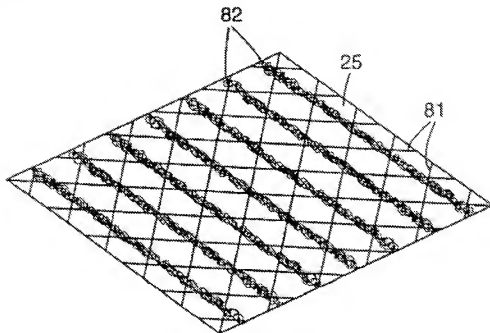


FIG. 8

According to Jackson, this transverse orientation step causes portions of the yarns 82 to become detached from the backing. See, e.g., id., col. 3, lines 47-53. To ensure that the yarns 82 are adequately bonded to the backing, Jackson explains that a secondary bond pattern 81 can be used to secure the yarns 82 to the backing. See, e.g., id., col. 6, line 63 – col. 7, line 22. Jackson notes, for example:

...[I]f the yarn fibers become too unattached in the transverse orientation step secondary bonding can be used to provide secure regular attachment without significant adverse effect on the loft created by the transverse orientation of the yarns. Id., col. 7, lines 18-22.

The Examiner contends that a person of ordinary skill in the art would have been motivated to apply Jackson's quadrilateral secondary bond pattern 81 to Kawanaka's and Ito's fabrics by a desire to improve the peel strength of Kawanaka and Ito's fabrics. But a person of

ordinary skill in the art would not have been motivated to combine the teachings of Kawanaka or Ito with those of Jackson and Harwood in the manner suggested by the Examiner.

First, absent impermissible hindsight, a person of ordinary skill in the art would not have been motivated to make the proposed combination by a desire to improve the peel strength of the Kawanaka or Ito loop materials.

Kawanaka purports that his loop material is "high in fastening power and low in cost" (abstract) and thus there would have been no reason for a person of ordinary skill in the art to believe that the fastening power of the loop material disclosed by Kawanaka was insufficient, and a person of ordinary skill in the art certainly would not have been motivated to increase the peel strength of Kawanaka's loop material by adding a production step, which would increase the cost of the loop material.

Similarly, Ito states that his loop material is low in production cost and thus suitable for use in disposable materials, and thus a person of ordinary skill in the art would hesitate to modify Ito to include further processing steps which would increase cost. Moreover, Ito further states that his loop material "is free from the slip-off of fibers as a loop side engaging element even when it is pulled by a hook side engaging element and thus can maintain its strength at a high level for a long period of time." Ito, Abstract. In view of this statement, a person of ordinary skill in the art would have believed the Ito fabric to have good strength without any modification.

Nor would a person of ordinary skill in the art have been motivated to make this combination for other reasons. As discussed above, the purpose of Jackson's secondary bond is to reattach yarn fibers that become detached from the backing during transverse orientation of the yarn/backing laminate. Neither Kawanaka nor Ito discuss a transverse orientation step or any other processing step that would cause their fibers to become detached from their points of adhesion or embossed regions, respectively. Thus, a person of ordinary skill in the art would not have seen any reason whatsoever to add Jackson's secondary bonds to Kawanaka's or Ito's fabrics.

The Examiner also contended that Harwood describes conventional adhesive bonding techniques that result in the formation of ribs. Without conceding that Harwood's adhesive bonding techniques form ribs, Applicants submit that, like Jackson, Harwood fails to provide any motivation for a person of ordinary skill in the art to form ribs on Kawanaka's or Ito's fabric.

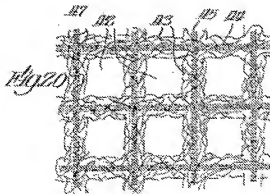
In view of the discussion above, Applicants request reconsideration and withdrawal of the rejection of claims 1, 3-13, and 15-17.

Claim Rejections Based on Jackson and Harwood

Claims 2-4 and 8-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jackson in view of Harwood. Applicants' claim 2 features loop materials that include a web of nonwoven fibrous material having open areas, raised areas defining loops, and rib areas surrounding the raised areas to anchor the loops. Jackson and Harwood, whether taken alone or in any proper combination, fail to disclose or suggest each and every one of the claimed features.

As noted above, Jackson discloses a loop fastening material that includes multiple yarns that are bonded to a backing substrate and then, after orientating the yarn/backing laminate, are further pattern bonded to the backing substrate.

Referring to Harwood's Figure 20, which is reproduced below, Harwood discloses a net-like nonwoven web that includes multiple openings 42 and a network portion 43. See, e.g., Harwood, col. 12, lines 23-37. A stretch-strengthenable binder 44, 45 is applied to the network portion 43 of the nonwoven web in order to reinforce the nonwoven web. See, e.g., id., col. 12, lines 38-53. Harwood notes that it is desirable for the nonwoven web to be as porous as possible. See, e.g., id., col. 12, lines 15-22.



The Examiner acknowledges that Jackson does not indicate that his bonding pattern produces ribs. The Examiner also acknowledges that Jackson's material does not include open areas free of fibers of the web. The Examiner, however, contends that Harwood discloses ribs

and open areas, and that it would have been obvious to a person of ordinary skill in the art to modify Jackson's loop fastening material to include the adhesive ribs and the openings or open areas disclosed by Harwood. The Examiner proposes that a person of ordinary skill in the art would have been motivated to modify Jackson to include ribs because "Jackson [teaches] that conventional adhesive bonding can be used and Harwood is an example of such pattern bonding." The Examiner further contends that a person of ordinary skill in the art would have been motivated to modify Jackson to include open areas because "Harwood [suggests] a 'net-like pattern' to be desirable for those situations where porosity is desirable as compared to a non-woven web lacking openings." Applicants disagree that a person of ordinary skill in the art would have been so motivated. The modifications proposed by the Examiner would require wholesale reconstruction of Jackson, replacing Jackson's continuous loop material with a net-like, open material. There is nothing in either reference to indicate that Jackson's loop material, modified in the proposed manner would be successful as a loop material, nor that this modification would be desirable. Nor is there anything to indicate that the materials described by Jackson would benefit from increased porosity. Thus, a person of ordinary skill in the art would not have been motivated to combine the teachings of Jackson and Harwood in the manner suggested by the Examiner.

In fact, a person of ordinary skill in the art would have been discouraged from making such a combination.

If Jackson's continuous backing material were replaced with the lace-like network of Harwood, the quadrilateral bonding pattern 81 utilized by Jackson, and thus any ribs that would arguably be formed by combining the teachings of Jackson and Harwood, would extend through the open areas of Harwood's lace-like network. This would tend to defeat Harwood's purpose of providing a patterned web that is "very, very porous or open." Furthermore, while Harwood describes other bonding patterns, such as patterns of solid dots, which may arguably allow Jackson's yarns to be bonded to Harwood's lace-like network without substantially interfering with the open areas of Harwood's lace-like network, such bonding patterns would not result in rib areas surrounding raised areas, as claimed. Nor do Jackson or Harwood provide any motivation for using bonding patterns that would surround raised fiber areas without interfering with Harwood's openings.

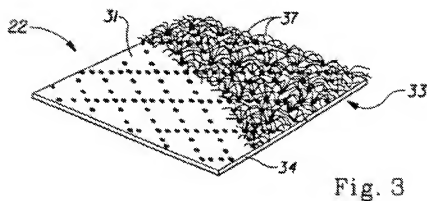
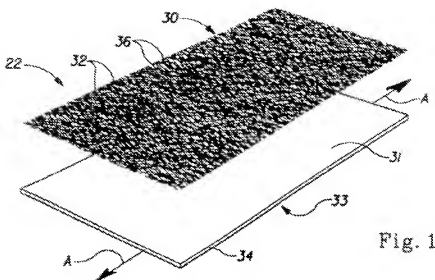
In addition, replacing Jackson's continuous backing material with the lace-like network of Harwood would make it difficult or impossible to securely adhere Jackson's yarns to the backing material and, as a result, would likely reduce the peel performance of the resulting loop fastening material. The Examiner contended in the office action mailed September 6, 2006 that there is no reason to consider it to be impossible to securely adhere Jackson's yarn to the backing material. But there is no disclosure in any of the cited references to indicate how this might be done. Thus, a person of ordinary skill in the art would have been discouraged from combining the teachings of Jackson and Harwood in the manner suggested by the Examiner for this reason as well.

In view of the discussion above, Applicants request reconsideration and withdrawal of the rejection of claims 2-4 and 8-17.

Claim Rejection Based on Jackson and King

Claim 28 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Jackson in view of King (U.S. Patent No. 5,595,567). Applicants' claim 28 covers loop materials that include a web of nonwoven fibrous material having planar areas, raised areas defining loops, and rib areas surrounding the raised areas to anchor the loops. The rib areas comprise fused fibers of the nonwoven web. Jackson and King, whether taken alone or in any proper combination, fail to disclose or suggest each and every limitation of claim 28.

As discussed above, Jackson discloses a low-cost loop fastening material that includes multiple yarns that are bonded to a backing substrate and then, after orientating the yarn/backing laminate, are further pattern bonded to the backing substrate. Referring to King's Figures 1 and 3, which are reproduced below, King discloses a female nonwoven fastening component 22 that includes a backing material 34 joined with a nonwoven web 30. See, e.g., King, col. 3, lines 31-32. The nonwoven web 30 includes filaments 36 that are secured to each other at fixed regions by inter-fiber bonds 32. See, e.g., id., col. 3, lines 36-40; col. 5, lines 57-67.



As noted above, the nonwoven web 30 is joined to the backing material 34. As shown in King's Figure 5, which is reproduced below, construction bonds 39 form a construction bond pattern 40 that joins the nonwoven web 30 to the backing material 34. See, e.g., id., col. 3, lines 43-45.

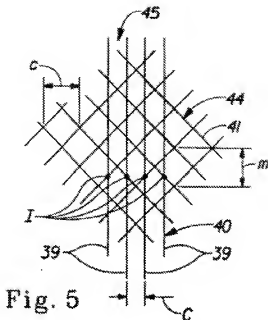


Fig. 5

As acknowledged by the Examiner, Jackson fails to disclose ribs that include fused fibers of a nonwoven web. The Examiner, however, contends that King discloses ribs including fused fibers, and that it would have been obvious to modify the structure of Jackson to utilize raised bonded regions made of the filament material described in King. But a person of ordinary skill in the art would not have been motivated to substitute King's inter-fiber bonds for Jackson's secondary bond pattern. As discussed above, the purpose of Jackson's secondary bond is to secure Jackson's yarns to his backing. The inter-fiber bonds described in King, in contrast, are restricted to the nonwoven material and do not secure the nonwoven material to the backing. Thus, such a combination would fail to achieve the result for which Jackson's secondary bonds were intended.

Moreover, a person of ordinary skill in the art would not have been motivated to use King's inter-fiber bonds in addition to the secondary bonds disclosed in Jackson. Unlike King, which describes a web of nonwoven material, Jackson merely describes strips of yarn that extend along a substrate. There is no indication that Jackson's narrow yarn strips would benefit from the inter-fiber bonds described by King. In addition, Jackson stresses that a purpose of his invention is to provide a low-cost loop fastening material. See, e.g., *id.*, col. 1, lines 5-7. Adding


additional bonds, such as King's inter-fiber bonds, would unnecessarily increase the cost of King's fastening material, and thus discourage a person of ordinary skill in the art from making such a combination.

In view of the discussion above, Applicants request reconsideration and withdrawal of the rejection of claim 28.

The brief fee in the amount of \$500 is being paid herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply all charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 05918-209001.

Respectfully submitted,

Date: February 27, 2007



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Appendix of Claims

1. A loop material for touch fastening comprising:
a web of nonwoven fibrous material defining a plane, the web including:
(a) raised areas defined by fibers of the web, the raised areas being elevated above the plane of the web and defining loops constructed for engagement with male touch fastener elements;
(b) rib areas surrounding the raised areas to anchor the loops; and
(c) between the rib areas, planar areas that are substantially in the plane of the web, the planar areas being defined by the web.
2. A loop material for touch fastening comprising:
a web of nonwoven fibrous material defining a plane, the web including:
(a) raised areas elevated above the plane of the web, defining loops constructed for engagement with male touch fastener elements;
(b) rib areas surrounding the raised areas to anchor the loops; and
(c) between the rib areas, open areas that are free of fibers of the web.
3. The loop material of claim 1 or 2 wherein said rib areas comprise a polymeric reinforcing material.
4. The loop material of claim 1 or 2 wherein said rib areas extend above the plane of the web.
5. The loop material of claim 1 wherein said planar areas comprise unbonded fibers.
6. The loop material of claim 1 or 5 wherein said planar areas comprise fibers backed by a layer of a polymeric reinforcing material.
7. The loop material of claim 1 or 5 wherein said planar areas are substantially free of polymeric reinforcing material.

8. The loop material of claim 1 or 2 wherein said rib areas comprise closed members that surround said raised areas.

9. The loop material of claim 8 wherein said raised areas are polygonal and said closed members comprise polygons.

10. The loop material of claim 8 wherein said raised areas are substantially dome-shaped and said closed members comprise rings or ellipses.

11. The loop material of claim 8 wherein at least some of said closed members are tangential to each other.

12. The loop material of claim 8 wherein said rib areas further comprise connecting members extending between said closed members.

13. The loop material of claim 12 wherein said closed members and said connecting members together define a network.

14. The loop material of claim 2 wherein said rib areas comprise closed members that surround said raised areas and connecting members extending between said closed members, said closed members and said connecting members together define a network defining a net material.

15. The loop material of claim 1 or 2 wherein the web comprises a carded web.

16. The loop material of claim 15 wherein said carded web comprises staple fibers.

17. The loop material of claim 3 wherein said polymeric reinforcing material is the same material as the fibrous material.

28. A loop material for touch fastening comprising:
a nonwoven web defining a plane, the web including:
- (a) raised areas, elevated above the plane of the web, defining loops constructed for engagement with male touch fastener elements;
 - (b) rib areas surrounding the raised areas to anchor the loops; and
 - (c) between the rib areas, planar areas that are substantially in the plane of the web, wherein the rib areas comprise fused fibers of the nonwoven web.

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Evidence Appendix

None.

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Related Proceedings Appendix

None.